

JAPAN

EDICT OF GOVERNMENT

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JIS D 9302 (2008) (English): Bicycles for young children

ISO INSIDE

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*The citizens of a nation must
honor the laws of the land.*

Fukuzawa Yukichi

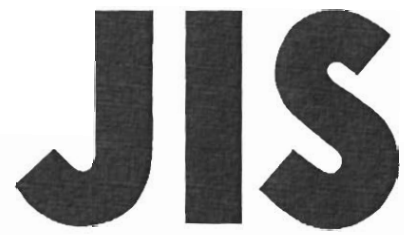
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(JBPI/JSA)

Bicycles for young children

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Foreword

This translation has been made based on the original Japanese Industrial Standard revised by the Minister of Economy, Trade and Industry, through deliberations at the Japanese Industrial Standards Committee as the result of proposal for revision of Japanese Industrial Standard submitted by Japan Bicycle Promotion Institute (JBPI)/ Japanese Standards Association (JSA) with the draft being attached, based on the provision of Article 12 Clause 1 of the Industrial Standardization Law applicable to the case of revision by the provision of Article 14.

Consequently **JIS D 9302**: 1998 is replaced with this Standard.

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Attention is drawn to the possibility that some parts of this Standard may conflict with a patent right, application for a patent after opening to the public, utility model right or application for registration of utility model after opening to the public which have technical properties. The relevant Minister and the Japanese Industrial Standards Committee are not responsible for identifying the patent right, application for a patent after opening to the public, utility model right or application for registration of utility model after opening to the public which have the said technical properties.

Bicycles for young children

Introduction

This Japanese Industrial Standard has been prepared based on the second edition of **ISO 8098** published in 2002 with some modifications of the technical contents due to the reasons such as that this Standard is intended for bicycles to be used mainly on public roads while the International Standard is not.

In this Standard the portions given continuous sidelines or dotted underlines are the matters in which the contents of the original International Standard have been modified. A list of modifications with the explanations is given in Annex JA.

1 Scope

This Standard specifies bicycles for young children defined in **JIS D 9111** (hereafter referred to as “bicycles”).

NOTE : The International Standard corresponding to this Standard and the symbol of degree of correspondence are as follows.

ISO 8098:2002 *Cycles-Safety requirements for bicycles for young children*
(MOD)

The symbols which denote the degree of correspondence in the contents between **JIS** and the corresponding International Standard are IDT (identical), MOD (modified) and NEQ (not equivalent) according to **ISO/IEC Guide 21**.

2 Normative references

The following standards contain provisions which, through reference in this text, constitute provisions of this Standard. The most recent editions of the standards (including amendments) indicated below shall be applied.

JIS A 1481 *Determination of asbestos in building material products*

JIS B 0205-1 *ISO general purpose metric screw threads—Part 1: Basic profile*

JIS B 0205-2 *ISO general purpose metric screw threads—Part 2: General plan*

JIS B 0205-3 *ISO general purpose metric screw threads—Part 3: Selected sizes for screws, bolts and nuts*

JIS B 0205-4 *ISO general purpose metric screw threads—Part 4: Basic dimensions*

JIS B 0209-1 *ISO general purpose metric screw threads—Tolerances—Part 1: Principles and basic data*

JIS B 0209-2 *ISO general purpose metric screw threads—Tolerances—Part 2: Limits of sizes for general purpose external and internal screw threads—Medium quality*

JIS B 0209-3 *ISO general purpose metric screw threads—Tolerances—Part 3: Deviations for constructional screw threads*

JIS B 0225 *Cycle threads*

JIS D 9101	<i>Cycles—Terminology</i>
JIS D 9111	<i>Cycles—Classification and essential characteristics</i>
JIS D 9112	<i>Cycle—Tyres—Dimensions</i>
JIS D 9401	<i>Frame—Assembly for bicycles</i>
JIS D 9411	<i>Mudguards for bicycles</i>
JIS D 9412	<i>Handlebars for bicycles</i>
JIS D 9413	<i>Bicycles—Handle grips</i>
JIS D 9414	<i>Bicycles—Brakes</i>
JIS D 9415	<i>Bicycles—Chainwheels and cranks</i>
JIS D 9416	<i>Bicycles—Pedals</i>
JIS D 9417	<i>Bicycles—Chains</i>
JIS D 9418	<i>Bicycles—Free wheels and hub cogs</i>
JIS D 9419	<i>Bicycles—Hubs</i>
JIS D 9420	<i>Spokes for bicycles</i>
JIS D 9421	<i>Rims for bicycles</i>
JIS D 9422	<i>Tire valves for bicycles</i>
JIS D 9431	<i>Bicycles—Saddles</i>
JIS D 9432	<i>Bicycles—Chain adjusters and crank cotter pins</i>
JIS D 9451	<i>Bicycles—Bells</i>
JIS D 9452	<i>Bicycles—Reflex reflectors</i>
JIS D 9453	<i>Bicycles—Luggage carriers and stands</i>
JIS D 9454	<i>Bicycles—Chain cases</i>
JIS D 9456	<i>Bicycles—Locks</i>
JIS G 4303	<i>Stainless steel bars</i>
JIS K 6302	<i>Pneumatic tyres for bicycles</i>
JIS K 6304	<i>Inner tubes for bicycle tyres</i>
JIS R 6252	<i>Abrasive papers</i>
JIS R 6253	<i>Waterproof abrasive papers</i>

3 Terms and definitions

For the purpose of this Standard, the terms and definitions given in **JIS D 9101** and the following apply.

3.1 stabilizers

removable auxiliary small wheels which are attached to both sides of the wheel to prevent the bicycle from falling sideways

4 Constitution and parts

4.1 Constitution

Bicycles shall consist of the parts necessary for travelling and safety through selection out of those listed in table 1.

4.2 Parts

The parts used for bicycles shall be in accordance with the Japanese Industrial Standards given in table 1, or at least equivalent thereto in quality. For using the parts listed in table 1 which are not specified in JIS, those shall be provided with the qualities necessary for travelling and safety.

The screw threads other than those specified in **JIS B 0225**, Annex 1 of **JIS D 9418**, or Annex of **JIS D 9422** shall be in accordance with **JIS B 0205-1** to **JIS B 0205-4**, and the tolerance class 6H/6g or finer as specified in **JIS B 0209-1** to **JIS B 0209-3**.

Table 1 Constitution

Part division ^{a)}	Name of parts	Applicable JIS No.
Frame unit	Frame-fork assembly	JIS D 9401
Steering device	Handlebar-stem assembly	JIS D 9412
	Handlebar grips	JIS D 9413
Driving device	Chainwheel and cranks	JIS D 9415
	Pedals	JIS D 9416
	Chain	JIS D 9417
	Free-wheel, hub cogs	JIS D 9418
	(Free-wheel hub) ^{b)}	JIS D 9419
Running device	Tyres	JIS K 6302
	Inner tubes	JIS K 6304
	Rims	JIS D 9421
	Spokes and nipples	JIS D 9420
	Hubs (ordinary hub, free-wheel hub, multispeed hub, coaster brake hub, brake hub)	JIS D 9419
	Monoblock wheel	—
	Stabilizers	5.11
Gear-change device	(Multispeed hub) ^{b)}	JIS D 9419
Braking device	Brake assembly (pull-up rim brake, caliper brake, band brake, internal expanding brake, disk brake)	JIS D 9414
	(Coaster brake hub) ^{b)} , (brake hub) ^{b)}	JIS D 9419
Seating device	Saddle	JIS D 9431
Luggage carrying device	Luggage carrier	JIS D 9453
	Basket	—
	Bag	—
Supporting device	Stand	JIS D 9453

Table 1 (concluded)

Part division ^{a)}	Name of parts	Applicable JIS No.
Warning device	Bell	JIS D 9451
	Buzzer	—
	Reflex reflector	JIS D 9452
Protective device	Mudguards	JIS D 9411
	Mud-flap	—
	Chainguard	JIS D 9454
	Cotter pin covers	—
Accessories	Lock	JIS D 9456
Fasteners	Crank cotter pins, chain adjusters	JIS D 9432
	Bolts, nuts, machine screws	—
<p>Notes ^{a)} For the part division, see JIS D 9111.</p> <p>^{b)} Those composite parts, which are free-wheel hub composed with driving function, multispeed hub with change gear function, and coaster brake hub and brake hub with braking function, are admitted collectively into the division of running device. Coaster hubs are referred to as “back-pedal brakes” in the ISO standard.</p>		

5 Safety (including performance, construction, shape and dimensions)

5.1 General

5.1.1 Principal dimensions

The length, width (including the stabilizers) and maximum saddle height of bicycles shall be as given in figure 1.

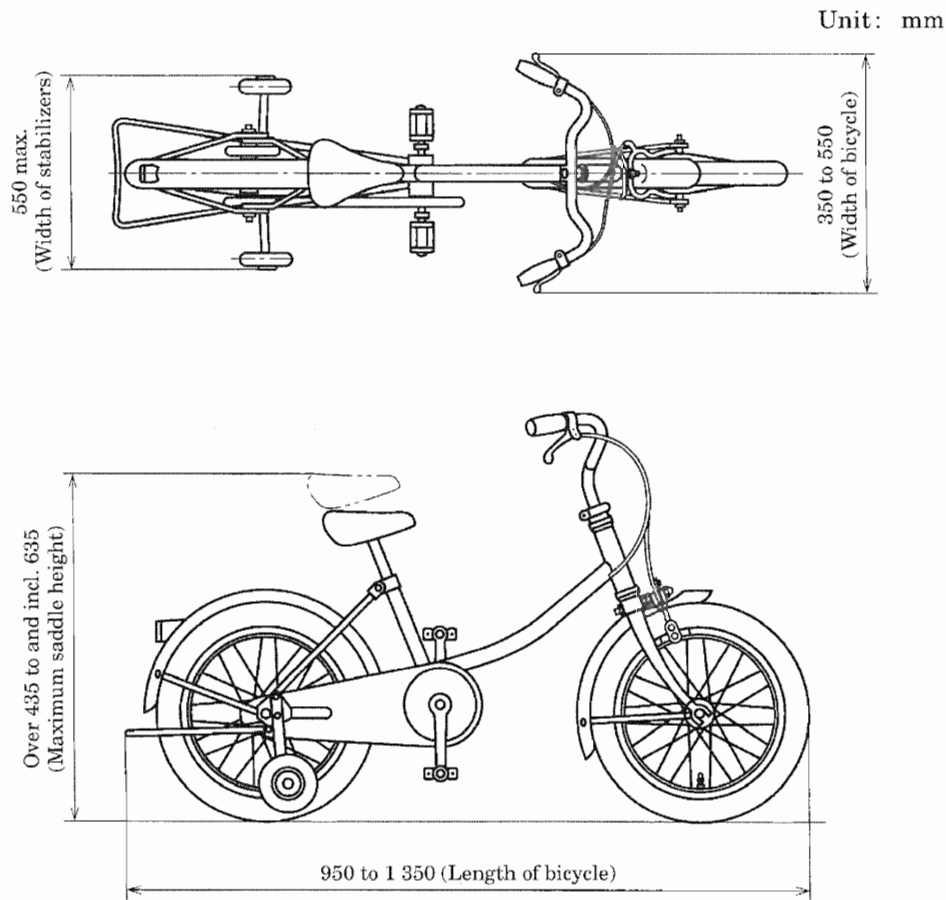


Figure 1 Dimensions of bicycles (informative)

5.1.2 Sharp edges

Bicycles shall be free from exposed edges, sharp points, burrs, fins and so on capable of injuring a human body during normal riding or normal handling. Further, the ends of brake levers, stand, etc. shall be rounding processed or covered with a cap or the like which is not easily removed.

5.1.3 Protrusions

Any rigid exposed protrusion 8 mm or longer (those of soft rubber or plastics are excluded) after assembly shall terminate in a radius of not less than 6.3 mm, and also, if it has a rectangular end, have a major end dimension greater than 12.7 mm and a minor end dimension greater than 3.2 mm. Screw threads shall be limited to a protrusion length of one major diameter of the screw beyond the internally threaded mating part (nut surface and the like).

This does not apply to those requiring adjustment such as chain adjusters and those covered with cap and the like.

NOTE : The exposed protrusion test cylinder, which is a device to decide protrusion that can be contacted by the central 50 mm of the cylinder 150 mm long and 45 mm in diameter (simulating a limb) as an exposed protrusion, may be used as required (see figure 2).

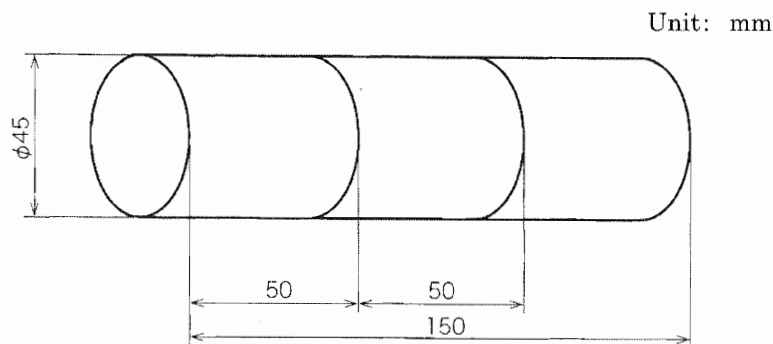


Figure 2 Exposed protrusion test cylinder

5.1.4 Cables

Control cables used for transmission of brakes, derailleurs, etc. shall have a length necessary for operation, without causing excessive slack, and shall actuate the system smoothly.

The end of inner cables shall be treated, to prevent the cables from untwisting, with such a means as covering with a cap, which shall withstand a removal force of 20 N when pulled by a push-pull scale.

5.1.5 Fixing of each part

The screw threads fastening each part of bicycles shall be engaged for a length ensuring sufficient fixing force, and so tightened as not to loosen easily during the riding. Any screws used to attach brake mechanisms and mudguards to the frame and for assembling suspension systems shall be provided with suitable locking devices such as lock-washers, nylon nuts and adhesives. In the case where mudguards are directly fixed to the front and rear axles, such locking devices need not be applied. The handlebar stem and the seat pillar shall be rigidly fitted at least on a depth of each minimum insertion mark.

Screws which are used for fastening the handlebar, handlebar stem, bar-end bar, saddle and seat pillar shall not be damaged when tightened with 150 % of a tightening torque recommended by the manufacturer.

5.2 Brakes

5.2.1 General

Bicycles shall be equipped with independent braking systems which operate on the front and rear wheels respectively. Use of any asbestos-containing material for manufacturing the brake is not permitted.

The asbestos content shall be determined according to clause 7 of JIS A 1481.

5.2.2 Hand-operated brake

Hand-operated brake systems shall be as follows.

- a) **Brake lever position** Generally, the front brake shall be positioned on the right side of handlebar and that for the rear brake on the left side.

- b) **Brake lever dimensions** The distance between the outer surfaces of the brake lever and the handlebar grip shall not exceed 60 mm¹⁾ excluding the area of 20 mm from the end of brake lever (see figure 3).

Note ¹⁾ Those adjustable to maximum of 60 mm distance are also permitted.

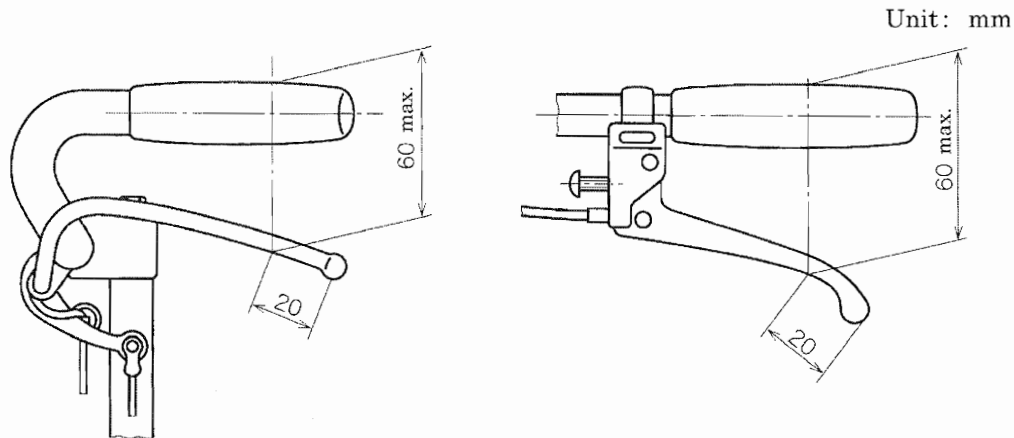


Figure 3 Brake lever dimensions

- c) **Brake assembly fastening** The screws for attaching the brake mechanisms to the frame shall be provided with suitable locking devices such as spring washers, lock-washers and nylon nuts.
- d) **Fixing of brake friction element** The brake block, lining, etc. shall be securely attached to the brake block holder, brake lining shoe or the like, respectively, and when the rocking test in 6.1 is applied, it shall not come off the holder, shoe, etc. or generate cracking. Further, after completion of the rocking test, the brake system shall be capable of meeting the requirements of 5.2.4 a) and 5.2.5 a).
- e) **Brake adjustment** The brake adjustment shall be as follows.
- 1) Brake assemblies shall be so constructed as capable of adjustment to maintain the braking force where the brake block, brake lining, etc. have worn or the brake cable have lengthened.
 - 2) There shall be suitable clearances between the brake blocks, brake lining, etc. and the braking surfaces, which shall come into contact without visible unevenness in response to a gripping operation of the brake lever.
 - 3) For a bicycle equipped with rod-operated brakes, when the handlebar is turned in a steering angle of 60°, there shall be no contact of the brake block, brake lining, etc. with the braking surface, or no visible bending, twisting and the like on the rear brake tube or plunger rod.

5.2.3 Coaster brake hub

The coaster brake hub incorporated in a bicycle shall begin to function within 60° after turning the crank in opposite direction to the driving, and shall release the braking force immediately when the crank is turned in the driving direction.

The measurement of the crank opposite turning angle shall be taken with the crank held against each position with a torque of at least 14 N·m.

5.2.4 Strength of brake system

The strength of brake systems shall be as follows.

- a) **Hand-operated brake** For bicycles equipped with a hand-operated brake, when subjected to the strength test of **6.2.1**, there shall be no failure of the brake system or of any component thereof.
- b) **Coaster brake hub** For bicycles equipped with a coaster brake hub, when subjected to the strength test of **6.2.2**, there shall be no failure of the brake system or of any component thereof.

5.2.5 Braking performance

The braking performance shall be as follows.

- a) The braking force of hand-operated brake systems, when subjected to the brake performance test of **6.3**, shall increase progressively as the brake lever force is increased from 50 N to 90 N. The braking force for a lever force of 50 N to 90 N applied shall be as given in table 2.

The braking force shall be within the limits, i.e. between the minimum and the maximum values for the front brake and shall not be less than the minimum value for the rear brake.

Table 2 Braking force of hand-operated brake

Unit: N

Brake lever force	Braking force measured at tyre surface	
	min.	max. (only for front brake)
50	40	120
90	60	200

- b) The braking force of coaster brake hub systems, when subjected to the brake performance test of **6.4**, shall increase progressively as the pedal force is increased from 20 N to 100 N. The braking force shall not be less than 50 % of the pedal force.

5.3 Steering

5.3.1 Steering stability

The steering stability shall be as follows.

- a) The steering shall exhibit neither unsmoothness such as tight spots, stiffness, etc. nor visible slackness in the bearings.
- b) A minimum of 25 % of the total mass of the bicycle and rider shall act on the front wheel axle when the rider is holding the handlebar grips and sitting on the saddle, with the saddle and rider in their most rearward positions.
- c) The steering shall be free to turn through at least 60°, but not more than 180°, either side of the straight-ahead position.

5.3.2 Fixing strength of steering assembly

The fixing strength of steering assemblies shall be as follows.

- a) When subjected to the fixing strength test of **6.5.1**, there shall be no movement of the handlebar relative to the stem.
- b) When subjected to the fixing strength test of **6.5.2**, there shall be no movement of the handlebar stem relative to the fork stem.

5.3.3 Handlebar and grip

The handlebar and handlebar grips shall be as follows.

- a) The circumference of handlebar grips where the fingers grasp shall be 53 mm to 95 mm.
- b) The height difference between the top of handlebar grip and the centre of saddle seating face, with the handlebar pulled up to the minimum insertion mark and the saddle lowered in the lowest position, shall not exceed 300 mm.
- c) The both ends of the handlebar shall be covered with handlebar grips, end caps and the like. Handlebar grips shall withstand a removal force of 100 N or more when tested in accordance with **6.5.3**. End caps or other similar parts shall withstand a removal force of 70 N or more when tested in accordance with **6.5.4**.

5.4 Front fork

The wheel attaching parts of front fork shall be such that when the front axle or hub cones are firmly abutting the top face of the fork end slots, the front wheel remains central within the front fork.

5.5 Wheels

5.5.1 Rotational trueness

The radial and axial run-outs of a wheel, represented by the full indicator reading of dial gauge measured on the rim surface of the wheel during one revolution about the axle fixed, shall be as follows. Figure 4 shows an example of the measurement.

- a) **Radial run-out** The radial run-out measured at an appropriate position of the rim as shown in figure 4 shall not exceed 2 mm for a wheel used in conjunction with a rim brake, and 4 mm for the others.
- b) **Axial run-out** The axial run-out measured at an appropriate position of the rim in parallel with the axle shall not exceed 2 mm for a wheel used in conjunction with a rim brake, and 4 mm for the others.

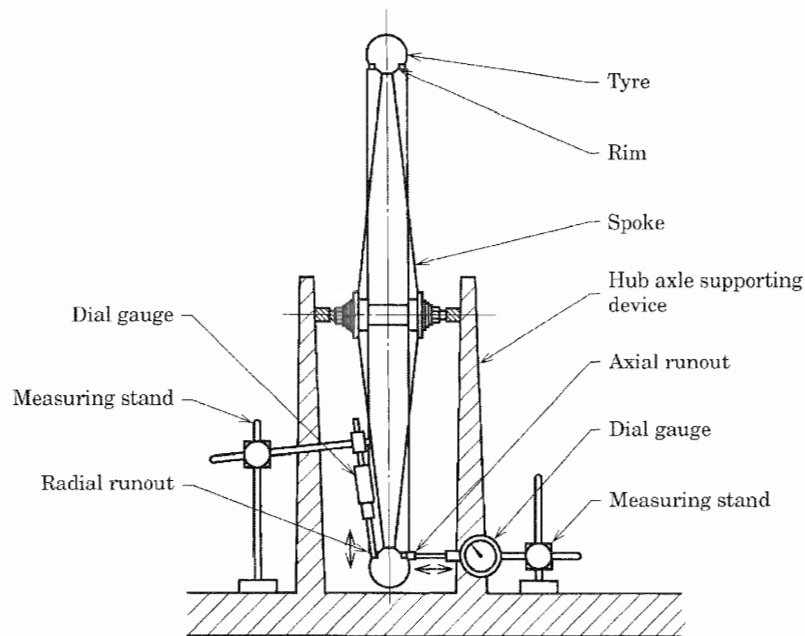


Figure 4 Example for measurement of wheel rotational trueness

5.5.2 Clearance

There shall be at least 6 mm of clearance between the tyre and any part of frame or front fork.

5.5.3 Strength

When the static load test of **6.6** is carried out on a wheel, there shall be no failure of any of the components of the wheel, and the permanent deformation, measured at the point of application of the test force, shall not exceed 1.5 mm.

5.5.4 Wheel retention

5.5.4.1 General

Wheels shall be secured to the bicycle frame and fork such that, when adjusted to the manufacturer's recommendations, they comply with **5.5.4.2** and **5.5.4.3**.

Wheel hub nuts shall have a minimum removal torque (loosening torque) of 70 % of the manufacturer's recommended tightening torque.

5.5.4.2 Front wheel retention

There shall be no relative motion between the front hub axle and the fork when a force of 500 N is applied symmetrically to either side of the front axle for a period of 30 s in the direction of removal of the wheel. Where agreed between the parties concerned with delivery, this force measurement may be substituted with a measurement of the wheel hub nut clamping torque based on a clearly correlative data.

5.5.4.3 Rear wheel retention

There shall be no relative motion between the rear hub axle and the frame when a force of 1 000 N is applied symmetrically to either side of the axle for a period of 30 s in the direction of removal of the wheel.

5.6 Quick-release mechanism

Quick-release mechanism shall not be used for children's bicycles.

5.7 Tyres and tubes

5.7.1 Marked inflation pressure

The standard inflation pressure or maximum inflation pressure shall be permanently marked on the sidewall of the tyres and shall be readily visible when the tyre is assembled on the wheel. Non-pneumatic tyres are excluded from this requirement.

5.7.2 Compatibility of pneumatic tyre with rim

Wheels with a tyre defined in **JIS D 9112**, when maintained for a period of 5 min with the marked inflation of pressure plus 100 kPa (gauge pressure), shall cause no failure of fitting between the tyre and rim or its equivalent part.

5.8 Drive system

5.8.1 Pedal tread

- a) The tread surface of a pedal shall be secured against movement within the pedal assembly. The pedal shall be able to turn freely on its axle.
- b) Pedals shall either:
 - 1) have tread surfaces on the top and bottom surfaces, or
 - 2) if it has a tread surface on one side, have a definite preferred position that automatically presents the tread surface to the rider's foot.

5.8.2 Pedal clearance

The pedal clearances, defined as ground clearance and toe clearance, shall be as follows.

For the purpose of these requirements, the tyres shall be inflated to the marked inflation pressure.

- a) **Ground clearance** The ground clearance angle of a bicycle with the stabilizers detached shall be not less than 20°. When a bicycle is equipped with a sprung suspension, this measurement shall be taken with the suspension in a depressed position after 30 kg weighing on the saddle (see attached figure 2 of **JIS D 9101**).
- b) **Toe clearance** The toe clearance of bicycles shall be not less than 89 mm (see attached figure 3 of **JIS D 9101**).

5.8.3 Strength of driving device

For the driving device, when the static load test of **6.7** is carried out, there shall be no visible deformation nor fracture of any component of the drive system, and drive capability shall not be lost.

5.8.4 Gear changeability

A change gear device, if it is provided, shall ensure shifting the gear ratio, and work smoothly.

5.8.5 Chain

The chain shall be stretched with neither visible slackening nor over tightening, and function smoothly.

As required, chain adjusters should be attached to the rear axle fixing parts.

5.9 Seating device

5.9.1 Limiting dimensions

No part of saddle, saddle supports and the like shall be more than 125 mm above the centre of saddle seating face.

5.9.2 Fixing the seating device

The seating device shall be so fixed as free of visible saddle inclination and, when subjected to the fixing test of **6.8**, there shall be no visible deformation or fracture of any part and no movement of the saddle clamp (including equivalent part) with respect to the seat pillar, or of the pillar with respect to the frame.

5.10 Protective device

Bicycles shall have a protective device against the entrapment of clothing or body parts.

- a) A bicycle having a maximum saddle height of 560 mm or more shall be equipped with a chainwheel disc or other protective device to shield the outside face of the upper junction of the chain and chainwheel. A chainwheel disc shall exceed in diameter the outside face of the chainwheel by at least 10 mm when measured at the teeth ends. A protective device other than a chainwheel disc shall shield the chain, as shown in figure 5, for a distance of at least 25 mm measured along the chain prior to the point where the chainwheel teeth first pass between the side plates of the chain.

Unit: mm

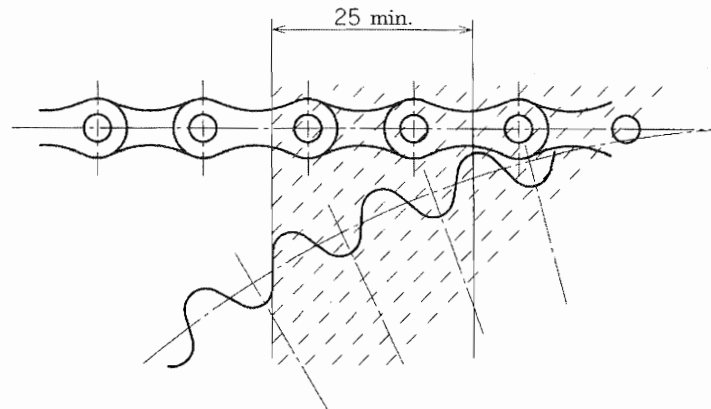


Figure 5 Chain and chainwheel junction

- b) A bicycle having a maximum saddle height of less than 560 mm shall be equipped with either of the following.
- 1) A chainguard that shields, as shown in figure 6, the outside face and edge of the chain, chainwheel and rear sprocket, and the inside face of the chainwheel.
 - 2) A chainguard that shields the outside and upper side faces of the chain, chainwheel and rear sprocket, and the inside face of the chainwheel.

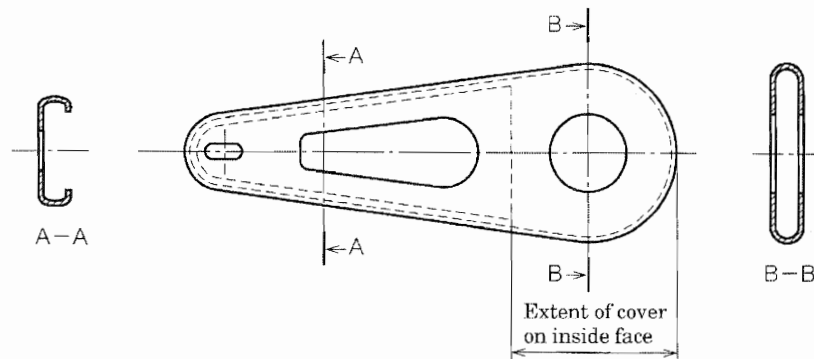


Figure 6 Chainguard

5.11 Stabilizers

5.11.1 Dimensions

The dimensions of stabilizers shall be as follows.

- a) The distance between the central planes of the rear wheel and each stabilizer wheel shall be not less than 175 mm.
- b) With the bicycle in unridden state, the height difference between the rear wheel and either of the both stabilizer wheels shall be 25 mm or less, as shown in figure 7. For these measurements, the tyres shall be inflated to the marked inflation pressure.

Unit: mm

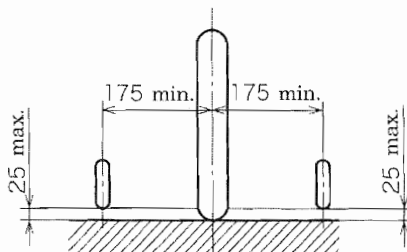


Figure 7 Height difference between rear wheel and stabilizer wheels

5.11.2 Strength

The strength of stabilizers shall be as follows.

- a) For stabilizers, when the vertical load test of **6.9.1** is carried out, the deflection under load and the permanent deformation shall not exceed 25 mm and 15 mm respectively.
- b) For stabilizers, when the longitudinal rearward load test of **6.9.2** is carried out, the permanent deformation shall not exceed 15 mm. Further, there shall be no visible fracture of any component of the stabilizer assembly.

5.12 Reflex reflectors

A bicycle shall be equipped with a front reflector or reflective tape, rear reflector, pedal reflectors, side reflectors, etc. The performance of these reflex reflectors shall comply with **JIS D 9452**. Further, the provision and attachment shall be as follows.

- a) **Rear reflectors** The rear reflectors shall be as follows.

- 1) The rear reflectors shall be red in colour.
- 2) A reflector shall be so mounted as that the top of the lens locates above the level of the rear axle.
- 3) The optical axis or main optical axis shall be directed in parallel, within 5° of the horizontal-vertical alignment, to the travelling line of the bicycle.
- 4) When a force of 70 N (or 50 N, if it is mounted on a mudguard) is applied for 30 s under the same condition as riding and in a direction at most likely to affect its alignment, the deflection of the reflective face during the test and that after removing the force shall be less than 15° and less than 5° respectively. Further, there shall be no fracture or other visible failure on any part.

- b) **Pedal reflectors** The pedal reflectors shall be as follows.

- 1) The pedal reflectors shall be amber in colour.
- 2) The pedal reflectors shall be located on the front and rear surfaces of the pedal.
- 3) The surface of pedal reflector lens shall be sufficiently recessed from the edge of the pedal or its housing.

- c) **Front reflectors or reflective tapes** The front reflectors or reflective tapes shall be as follows.
- 1) The front reflectors shall be clear in colour.
 - 2) The front reflector shall be located above the front wheel axle where the whole lens surface can be recognized from the front.
 - 3) For an alternative to the front reflector, a reflective tape may be used.
- d) **Side reflectors, etc.** The side reflectors, etc. shall be as follows.
- 1) A bicycle shall be equipped with two side reflectors each visible from both sides or reflective devices having equivalent performance thereto (a reflective material, e.g. reflective tyres, reflective tapes).
 - 2) All the reflective elements of side reflector, etc., shall be the same colour of clear or amber.

5.13 Warning device

Every bicycle shall be equipped with a bell or buzzer, of which the trigger, lever and switch shall be located as allowing to be operated easily during the riding.

5.14 Lock

A bicycle equipped with a side lock shall be always provided with preventions of turning and slipping down of the lock.

5.15 Stand

A stand, if it is equipped, shall be operable readily by the rider's muscular force, and shall allow the bicycle to be stable well as not to easily fall down while it is on standing position.

6 Test methods

6.1 Brake block test

Conduct the test on a bicycle, with the brakes correctly adjusted, and with a rider of 30 kg weight, or a bag full of sand or lead beads of 30 kg mass on the saddle. Actuate each brake lever with a force of 130 N and maintain this force during the test. Subject the bicycle to five forward and five rearward movements on the dry and flat paved road, each of not less than 75 mm. Examine the bicycle for dislocation of brake block or brake lining, or any cracking, etc.

The tyres shall be inflated to the marked inflation pressure.

6.2 Brake system load test

6.2.1 Hand-operated brake

For a bicycle equipped with a hand-operated brake, after ensuring that the brake system is correctly adjusted, apply a force, F , of 300 N²⁾ to the brake lever at a point 25 mm from the end of the lever and in a direction normal to the handlebar grip surface or its equivalent part in the plane of travel of the lever, as shown in figure 8, for

a total repeating of 10 times. Examine the brake system and its individual components for any abnormalities.

Note ²⁾ If the brake lever is brought into contact with the handlebar grip surface or its equivalent part, or level with the upper handlebar surface by a force, F , not exceeding 300 N that force shall be applicable.

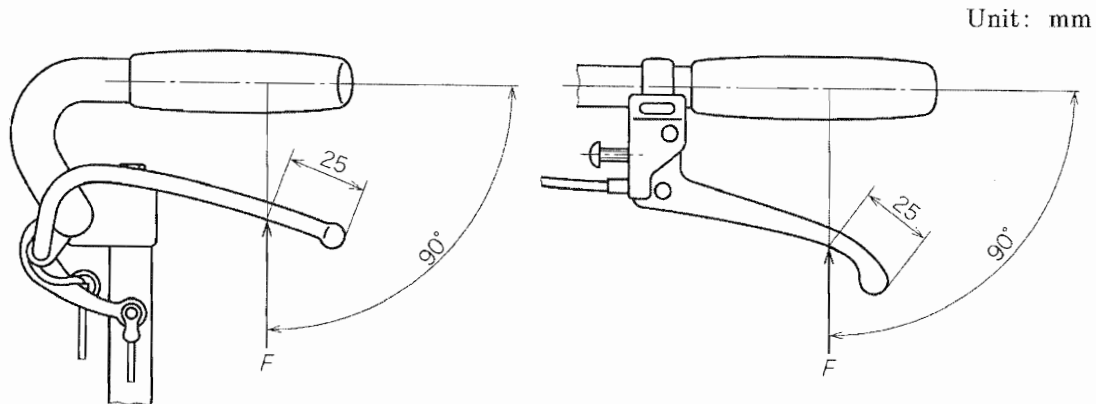


Figure 8 Position and direction of applied force on hand-operated brake lever

6.2.2 Coaster brake hub

For a bicycle equipped with a coaster brake hub, after ensuring that the braking system is correctly adjusted, and with the cranks in a horizontal position, as shown in figure 9, a force, F , of 600 N shall be applied gradually to the centre of the left-hand pedal tread to be maintained for 15 s. This test shall be repeated for a total of 10 times, and then the brake system and its components shall be examined for any abnormalities.

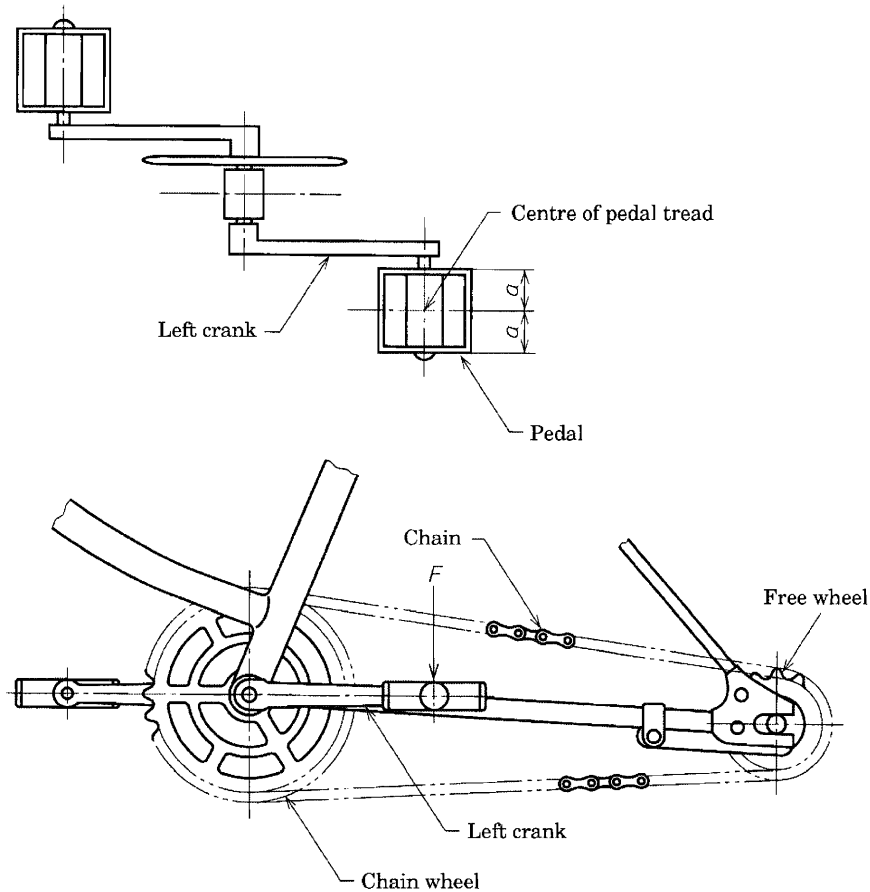


Figure 9 Load test on bicycle with coaster brake hub

6.3 Hand-brake performance test

A braking force measurement of a hand-brake system shall be conducted as follows.

- With a bicycle secured in a fixture in an inverted upright position, as shown in figure 10, measure the force tangentially to each circumference of the front and rear wheel tyres in the direction of forward movement, whilst applying a force, F , of at least five different values between 50 N and 90 N to the appropriate brake lever at a point 25 mm from the end of the lever and in a direction normal to the handle-bar grip in the plane of travel of the lever.
- The average of three measured values, which are readings of the force whilst maintaining a steady pull in the tangent direction to the circumference of tyre, shall be taken as the test result for each value of force on the brake lever.

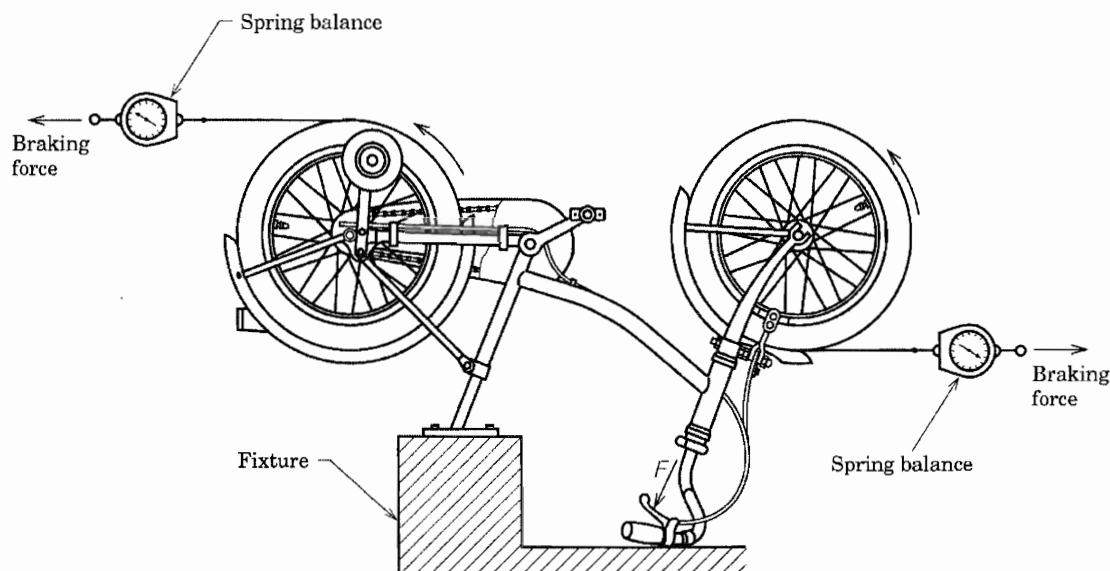


Figure 10 Hand-brake performance test

6.4 Coaster brake hub performance test

The coaster brake hub performance test shall be as follows.

- a) For a coaster brake hub performance, measure the braking force tangentially to the circumference of the rear wheel tyre and in the direction of forward movement with applying a force, F , to the left pedal at right angles to the crank and in the braking direction, as shown in figure 11.

The force on the pedal shall be within the limits of between 20 N and 100 N and for not less than five difference values but including 80 N.

- b) The test result, for each force on the pedal, shall be the average of the three measured values, which are read whilst maintaining a steady pull in the tangent direction to the tyre circumference.

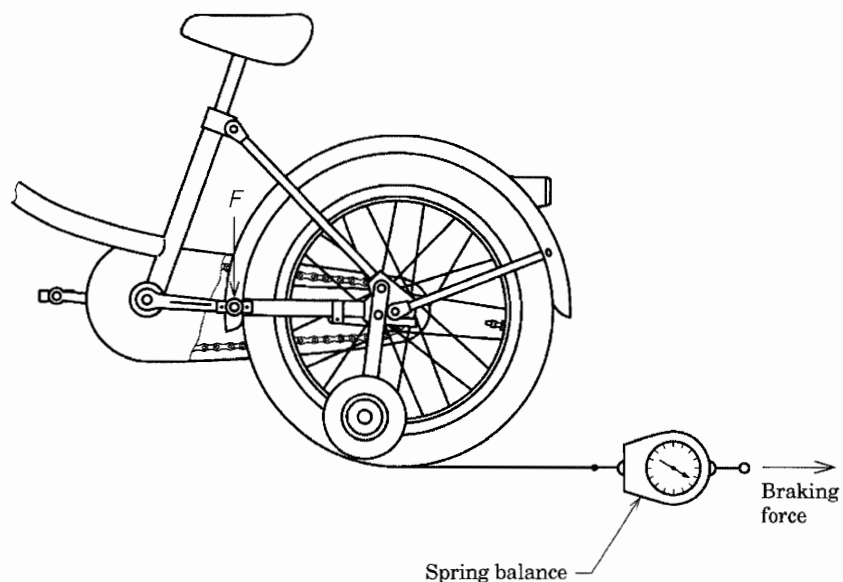


Figure 11 Coast brake hub performance test

6.5 Steering assembly test

6.5.1 Fixing test on handlebar/stem assembly

With the stem of the handlebar assembly clamped securely to the minimum insertion depth in a fixture, apply a force, F , of 130 N simultaneously to each side of the handlebar in a direction and at the location that will provide a maximum torque at the junction of the handlebar and stem, as shown in figure 12. Examine visually the movement of the handlebar with respect to the stem. Where the maximum torque occurs at the end of the handlebar, the force shall be applied as near as possible to the end and not further than 15 mm from the end.

Where the handlebar/stem assembly is by means of a clamp, the torque applied to the fastener shall be appropriate and not exceeding 20 N·m.

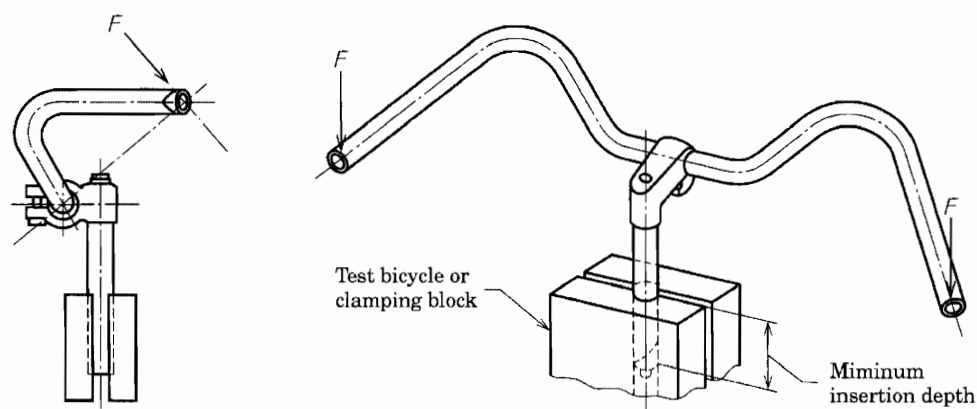


Figure 12 Fixing test on handlebar/stem assembly

6.5.2 Fixing test on handlebar stem and fork stem

With the handlebar stem correctly assembled in the fork stem of frame assembly, and the expander bolt fastened to a suitable torque not exceeding $20 \text{ N}\cdot\text{m}$, apply a torque of $15 \text{ N}\cdot\text{m}$ through the handlebar or test bar, as shown in figure 13 and examine the movement of the handlebar stem with respect to the fork stem.

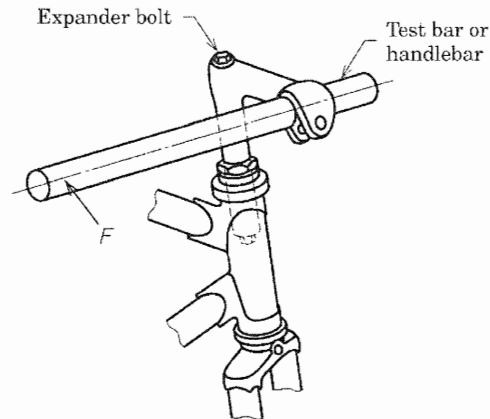


Figure 13 Fixing test on handlebar stem and fork stem

6.5.3 Removal force test on handlebar grip

With the handlebar grip mounted on a test handlebar, the assembly shall be immersed in warm water of $60 \text{ }^{\circ}\text{C} \pm 2 \text{ }^{\circ}\text{C}$ for 4 h or more and, after at least 30 min but within 2 h of taking it out, the handlebar grip shall be pulled at the inside end by means of a drawing attachment as shown in figure 14. In this case, the difference between the inner diameter of the hooking ring and outer diameter of the test handlebar shall not exceed 0.2 mm. For carrying out this test in a bicycle, the handlebars of actual use may be used in stead of such test handlebar.

The test handlebar shall be a round bar of SUS304 specified in **JIS G 4303**, the surface of which shall be finished with abrasive paper or waterproof abrasive paper of grain size P320 specified in **JIS R 6252** or **JIS R 6253**, and shall have the dimensions as given in table 3.

Table 3 Dimensions of test handlebar (informative)

Unit: mm

Nominal inside diameter of handlebar grip	Test handlebar outer diameter ϕ	Tolerance
16	15.9	0 -0.15
19	19.0	
22	22.2	

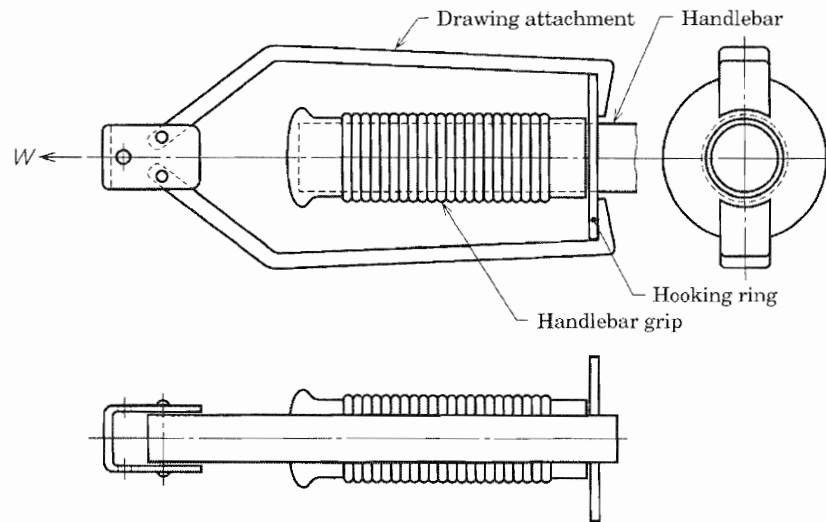


Figure 14 Removal force test on handlebar grip

6.5.4 Removal force test on end cap

With the end cap and the end plug for bar tape assembled, pull the end of the assembly by means of a drawing attachment as shown in figures 15 and 16, and examine the removal force of the fitting part.

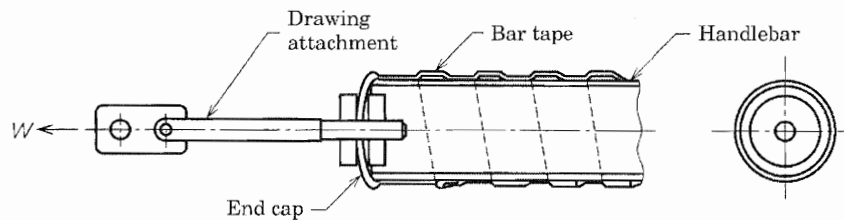


Figure 15 Removal force test on end cap

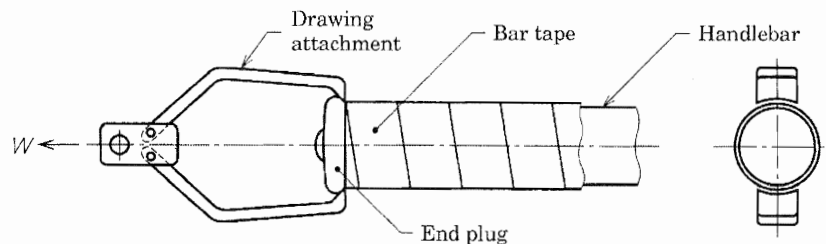


Figure 16 Removal force test on end plug

6.6 Static load test on wheel

For the static load test on a wheel, with the axle of the wheel clamped as shown in figure 17, apply a force of 180 N, at one point of the wheel rim and perpendicular to the central plane of the wheel for a duration of 1 min, and examine each part of the wheel for abnormalities or permanent deformation.

For a wheel of offset structure, force shall be applied in the direction of offset.

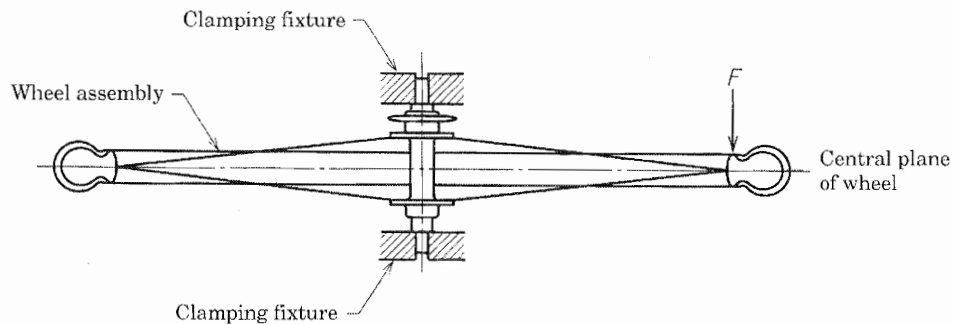


Figure 17 Static load test on wheel

6.7 Drive system static load test

The drive system static load test shall be conducted with an assembly consisting of frame, driving device, rear wheel assembly, gear-change device and so on, supporting the frame with the central plane vertical and fixing the rear wheel at the rim so as to prevent the wheel from rotating. Each part of the drive system shall then be examined for noticeable deformation, fracture and functioning abnormalities.

a) For those without gear-change system

- 1) With the left-hand crank in the forward horizontal position, a force of 600 N shall be applied vertically downwards to the centre of the left-hand pedal, and maintained for 15 s.

If the crank rotates while under load, due to a rear sprocket assembling condition, elongation or yield of the driving device and the like, to a position 30° or more, the crank shall be returned to horizontal or to some appropriate position above horizontal, and the test continued.

- 2) On completion of the test of 1), this test shall be repeated on the right-hand pedal.

b) For those with gear-change system

- 1) The test given in a) 1) shall be conducted with the gear-change system adjusted correctly in the highest gear ratio.
- 2) The test given in a) 2) shall be conducted with the gear-change system adjusted correctly in the lowest gear ratio.

6.8 Fixing test on seating part

For the fixing test on seating part, a force of 300 N shall be applied vertically downwards at a point within 25 mm from either the front or rear end of the saddle, whichever produces the greater torque on the saddle clamp. After removal of this force, a lateral force of 100 N shall be applied horizontally to a point within 25 mm from either the front or rear end of the saddle, whichever produces the greater torque on the clamps. It shall be checked whether or not there are visible deformation or fracture of any part and movement of the saddle clamp, including equivalent part, with respect to the seat pillar or of the pillar with respect to the frame.

The clamps for fixing the saddle/seat pillar and seat pillar/frame shall be tightened to an appropriate torque.

6.9 Stabilizer strength test

6.9.1 Vertical load test

For the vertical load test, with the bicycle frame inverted and rigidly secured, measure the deflection under load at a point on the circumference of the stabilizer wheel, while suspending a mass of 30 kg from one of the stabilizer wheels, as shown in figure 18, and maintain the assembly in the position for 3 min. Then, remove the mass, and after 1 min measure the permanent deformation at the same point. This test shall be repeated on the stabilizer wheel on the other side.

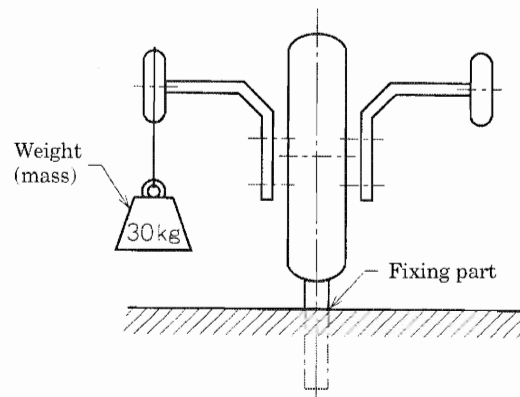


Figure 18 Vertical load test

6.9.2 Longitudinal rearward load test

For the longitudinal rearward load test, with the bicycle supported vertically with the front wheel axle upwards, as shown in figure 19, after suspending a mass of 30 kg from one of the stabilizer wheels and maintaining the assembly in the position for 3 min, remove the mass, and then after 1 min measure the permanent deformation on the circumference of the stabilizer wheel. This test shall be repeated on the stabilizer wheel on the other side.

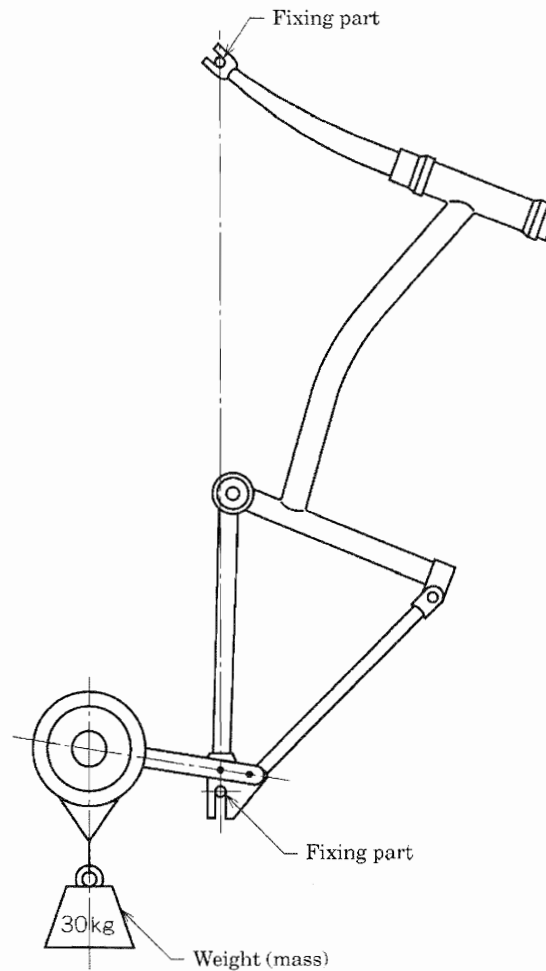


Figure 19 Longitudinal rearward load test

7 Inspection

Inspections for bicycles for young children are divided into type inspections³⁾ and delivery inspections⁴⁾ with inspection items for each type of the inspection as follows.

Sampling test procedures for the type inspection and the delivery inspection shall be agreed between the interested parties.

Notes ³⁾ A type inspection shall be performed on a bicycle newly designed and manufactured to decide whether it satisfies the quality characteristics as designed.

⁴⁾ A delivery inspection shall be performed at the delivery of a bicycle designed and manufactured in the same way as those found acceptable in the previous type inspection to decide whether it satisfies the quality characteristics as required.

a) Type inspection items

- 1) General
- 2) Brakes

- 3) Steering
- 4) Front fork
- 5) Wheels
- 6) Tyres and tubes
- 7) Drive system
- 8) Seating part
- 9) Protective device
- 10) Stabilizers
- 11) Reflex reflector
- 12) Warning device
- 13) Lock
- 14) Stand
- 15) Screw threads

b) Delivery inspection items

- 1) General
- 2) Hand-operated brake [brake lever position, brake lever dimensions and brake adjustment [see **5.2.2 e) 2), e) 3)**]]
- 3) Steering stability [see **5.3.1 a) and c)**]
- 4) Wheels (rotational accuracy, clearance, wheel retention)
- 5) Gear changeability
- 6) Chain
- 7) Stabilizers [dimensions [see **5.11.1 b)**]]
- 8) Rear reflector [see **5.12 a) 3)**]
- 9) Warning device
- 10) Stand

8 Marking

8.1 Marking on products

The name of the manufacturer or its abbreviation and the frame number shall be marked on the surface of the seat tube or the frame body by such means as transfer printing, a name plate or a seal.

8.2 Tags

Bicycles should be appended with a tag and the like describing characteristics and so forth on a conspicuous place.

9 Instructions

Each bicycle shall be provided with a set of instructions clearly indicating the notices on handling containing the following gist. Notice(s) not applicable for the particular bicycle may be omitted.

To facilitate the understanding of the reader (guardian), the instructions should be illustrated with drawings, or use enlarged letters or different colour for emphasizing matters requiring particular attention.

- a) The guardian shall read the instructions without exceptions and provide the child with the guidance in notices on handling. Also keep the booklet of instructions.
- b) The traffic regulations shall be observed in riding.
- c) For normal riding posture
 - 1) The height, weight and inside leg dimensions of an appropriate rider
 - 2) How to adjust the saddle and the handlebar heights, and cautions against adjusting exceeding the minimum insertion mark.
- d) Procedures and cautions on applying brakes (especially confirmation that the child who rides the bicycle can apply the brakes.)
- e) How to operate the gear change system
- f) Precautions on parking, including cautions against leaving the bicycle in a public or private area.
- g) The standard inflation pressure or the maximum inflation pressure of the tyre: ○○ kPa. This may instead be an instruction to see the pneumatic pressure indicated on the side wall of the tyre.
- h) Checking-up just before the riding
 - 1) Functioning of the front and rear brakes
 - 2) Inflation pressure of the tyre
 - 3) Other matters requiring attention
- i) Periods of checks and adjustments, and positions and procedures of checks.
 - 1) Any parts deformed shall be immediately replaced with new ones.
 - 2) Brake levers with excess play in dimensions may lead to nonfunction of the brake and shall be immediately subjected to the check at the store of purchase.
 - 3) Slackness of the chain is likely to lead to danger by causing derailing of the chain during driving and shall be immediately subjected to adjustment by the cyclery.
 - 4) The bicycle shall be subjected to a check by the cyclery within 2 months after beginning of use.

- 5) The bicycle shall be subjected to a check by the cyclery once every year or every time any abnormality is found.
- j) Timing of replacement for brake cables and brake blocks
- k) Precautions against riding at night
- l) Precautions against riding in rain, snow, or strong wind
- m) Lubrication
 - 1) Positions of lubrication, in drawings, etc.
 - 2) Cautions to instruct the users not to lubricate any braking surfaces.
- n) Storage instructions
- o) Other matters requiring attention. Young children shall be directed to wear a bicycle helmet whenever they ride a bicycle.
- p) Address, telephone number, and fax number of the consumer consulting office
- q) Information concerning disposal

Bibliography:

ISO 4210:1996 *Cycles—Safety requirements for bicycles*

EN 14765:2005 *Bicycles for young children. Safety requirements and test methods*

Annex JA (informative)

Comparison table between JIS and corresponding International Standard

JIS D 9302:2008 <i>Bicycles for young children</i>				ISO 8098:2002 <i>Cycles—Safety requirements for bicycles for young children</i>			
(I) Requirements in JIS		(II) International Standard number	(III) Requirements in International Standard		(IV) Classification and details of technical deviation between JIS and the International Standard by clause		(V) Justification for the technical deviation and future measures
No. and title of clause	Content		Clause No.	Content	Classification by clause	Detail of technical deviation	
1 Scope	Bicycles used by pre-school young children for daily pastimes		1	Bicycles for young children of 4 to 8 years old	Alteration	JIS is applicable up to 6 years old while ISO Standard up to 8 years old. Bicycles specified in JIS can be used on public roads while those in ISO Standard cannot.	It is difficult to change the scope because the definition of bicycles for young children and the areas where such bicycles can be used are widely established among Japanese consumers already.
2 Normative references							
4 Constitution and parts	Constitutional parts in each of the parts categories are listed together with the applicable JIS standards.		—	—	Addition	JIS standards are established for each of the parts, so the relevant JIS standards are added.	JIS standards are established for each of the parts in Japan so that safety of completed bicycles is guaranteed by assembling such parts.

(I) Requirements in JIS		(II) International Standard number	(III) Requirements in International Standard		(IV) Classification and details of technical deviation between JIS and the International Standard by clause		(V) Justification for the technical deviation and future measures
No. and title of clause	Content		Clause No.	Content	Classification by clause	Detail of technical deviation	
5.1.1 Principal dimensions	The length shall be 950 mm to 1 350 mm, the width, including the stabilizers, shall be 350 mm to 550 mm, the maximum saddle height shall be over 435 mm to and including 635 mm.		1 3.3.1 3.12.1	The maximum saddle height shall be more than 435 mm but not exceed 635 mm. The handlebar width shall be 350 mm to 550 mm. The stabilizers width shall not be less than 175 mm on one side.	Addition	JIS specifies additionally that the length shall be 950 mm to 1 350 mm. Also the overall width including the stabilizers is required not to exceed 550 mm.	Overall length and width of the bicycles are specified taking the Japanese road environment, housing situations and bicycle sizes into consideration.
5.1.2 Sharp edges	Bicycles shall be free from sharp points, burrs, fins and so on. Requirements for the ends of brake levers, stand, etc. are specified.		3.1.1 3.1.2	There shall be no exposed sharp edges. Any rigid, exposed protrusion shall terminate in a radius of not less than 6.3 mm.	Addition	JIS specifies that the ends of brake levers, stand, etc. shall be rounding processed or covered with a cap or the like.	JIS specifies the requirements from the stand point of safety.
5.1.4 Cables	Cables shall be free from excessive slack. The cap shall withstand a removal force of 20 N.		3.2.2.3	The inner wires shall be protected against corrosion by a waterproof liner, for example. The cap shall withstand a removal force of 20 N.	Addition Deletion	JIS specifies a requirement for slack of cables, too. ISO Standard specifies protection of wires against corrosion by means of a waterproof liner.	The additional requirement of JIS is for securing safety. The cables are normally covered with a waterproof liner, so it is considered not necessary to specify the requirement in JIS .

(I) Requirements in JIS		(II) International Standard number	(III) Requirements in International Standard		(IV) Classification and details of technical deviation between JIS and the International Standard by clause		(V) Justification for the technical deviation and future measures
No. and title of clause	Content		Clause No.	Content	Classification by clause	Detail of technical deviation	
5.1.5 Fixing of each part	<p>Specifications regarding fixing force, locking devices and minimum failure torque of fastening screws.</p> <p>Locking devices are not necessary for mudguards directly fitted to the front and rear axles.</p> <p>The handlebar stem and the seat pillar shall be rigidly fitted at least on a depth of each minimum insertion mark.</p>		3.1.3	<p>Specifications regarding suitable locking devices.</p> <p>Specifications regarding the minimum failure torque.</p>	Addition	<p>JIS clearly excludes mudguards fitted directly to the axles from the locking device requirement, while ISO Standard also does the same by limiting the locking device requirements only to "screws used to attach something to the frame".</p> <p>ISO Standard does not require the fitting at least on a depth of each minimum insertion mark, but it is mentioned in the instruction manual that such adjustments shall be made by users according to their physical sizes.</p>	The additional requirements of JIS are for securing safety.

(I) Requirements in JIS		(II) International Standard number	(III) Requirements in International Standard		(IV) Classification and details of technical deviation between JIS and the International Standard by clause		(V) Justification for the technical deviation and future measures
No. and title of clause	Content		Clause No.	Content	Classification by clause	Detail of technical deviation	
5.2 Brakes 5.2.1 General	Bicycles shall be equipped with independent braking systems which operate on the front and rear wheels, respectively. Asbestos shall not be used.		3.2.1	Bicycles with a maximum saddle height of 560 mm or more shall be equipped with two independent braking systems, one for the front wheel and one for the rear. Bicycles with a maximum saddle height of less than 560 mm shall be equipped with at least one braking system.	Addition	JIS requires two independent braking systems regardless of the saddle height. JIS also prohibits use of asbestos.	The bicycles specified in JIS are intended for use on public roads, so two independent braking systems are required by Japanese road traffic law. Use of asbestos is prohibited in Japan by the implementation orders of the Industrial Safety and Health Law. Use of asbestos is also prohibited in ISO 4210 .
5.3 Steering 5.3.1 Steering stability	The mass to be born by the front wheel and the steering angle to the right and left are specified. The steering shall not turn more than 180°.		3.3.4	The mass to be born by the front wheel and the steering angle to the right and left are specified.	Addition	JIS specifies that the maximum turning angle of the steering shall not exceed 180°.	JIS specifies the requirement from the stand point of safety.
5.3.2 Fixing strength of steering assembly	The fixing strength of the handlebar and the handlebar stem is specified.		3.3.5	Torque tests and static bending tests for the handlebar stem as well as the fixing strength between the handlebar and the stem are specified.	Deletion	JIS does not specify the torque tests and the static bending tests for the handlebar stem.	The torque tests and static bending tests for the handlebar stem are specified in JIS D 9412 .

(I) Requirements in JIS		(II) International Standard number	(III) Requirements in International Standard		(IV) Classification and details of technical deviation between JIS and the International Standard by clause		(V) Justification for the technical deviation and future measures
No. and title of clause	Content		Clause No.	Content	Classification by clause	Detail of technical deviation	
5.3.3 Handlebar and grip	The grip circumference (53 mm to 95 mm), the height difference between the grip and the saddle (300 mm) and the removal force of the grips (not less than 100 N after immersion in warm water) are specified.		3.3.1 3.3.2	The height difference between the saddle and the handlebar grip shall not exceed 250 mm.	Alteration	ISO Standard does not specify the grip circumference. The height difference between the saddle and the handlebar grip is larger by 50 mm in JIS .	In order to secure safety, JIS specifies the grip circumference so that young children can firmly grip the handlebars. The larger height difference is for enabling young children to use a bicycle for longer time.
5.5 Wheels 5.5.1 Rotational trueness	The radial and axial run-outs of a wheel shall not exceed 2 mm for a wheel used in conjunction with a rim brake and 4 mm for the others.		3.6.1.2 3.6.1.3	Radial and axial run-outs for wheels shall not exceed 2 mm.	Alteration	JIS specifies that radial and axial run-outs shall not exceed 4 mm for wheels used not in conjunction with a rim brake.	Because integrated resin wheels are used in many cases for bicycles for young children in Japan, the requirements are changed accordingly.
5.5.4.2 Front wheel retention	There shall be no relative motion between the front hub axle and the fork when a force of 500 N is applied to the front wheel. This force measurement may be substituted with a measurement of the wheel hub nut clamping torque.		3.6.4.2	There shall be no relative motion between the front hub axle and the fork when a force of 500 N is applied to the front wheel.	Addition	JIS allows for substitution of the force measurement with the wheel hub nut clamping torque measurement.	The additional specification of JIS is for facilitating quality control in the production site.

(I) Requirements in JIS		(II) International Standard number	(III) Requirements in International Standard		(IV) Classification and details of technical deviation between JIS and the International Standard by clause		(V) Justification for the technical deviation and future measures
No. and title of clause	Content		Clause No.	Content	Classification by clause	Detail of technical deviation	
5.6 Quick-release axle mechanism	Quick-release axle mechanism shall not be used for bicycles for young children.		—	A requirement for the quick-release axle mechanism was deleted when the Standard was revised in 2002.	Addition	JIS clarifies that a quick-release axle mechanism shall not be used for bicycles for young children.	Since the requirement regarding the quick-release axle mechanism was deleted from the ISO Standard, JIS clarifies not to use the mechanism. EN 14765 : 2005 also clarifies the same.
5.7 Tyres and tubes	Tyres shall be marked with the standard or maximum inflation pressure on the side walls. A pressure of 100 kPa in addition to the standard or maximum inflation pressure shall cause no failure of fitting between the tyre and rim.		3.7	The maximum inflation pressure recommended by the manufacturer shall be marked on the tyres. When inflated to 110 % of the maximum inflation pressure, the tyre shall remain intact on the rim.	Selection Alteration	Standard inflation pressure is added to JIS so that it can be marked on the tyres. JIS specifies a test pressure of 100 kPa plus the marked inflation pressure, while ISO Standard specifies a test pressure of 110 % of the maximum inflation pressure.	In Japan, standard inflation pressure is marked in many cases. JIS requirements are mostly in line with ISO 8098 : 1989, but the revision was put off this time because the test method is widely used in Japanese industry. The revision will be made at the next opportunity.
5.8.4 Gear changeability	A requirement for a change gear device is specified.		—		Addition	The requirement is added to JIS .	The additional requirement of JIS is for securing safety.
5.8.5 Chain	A requirement for a chain is specified.		—		Addition	The requirement is added to JIS .	The additional requirement of JIS is for securing safety.

(I) Requirements in JIS		(II) International Standard number	(III) Requirements in International Standard		(IV) Classification and details of technical deviation between JIS and the International Standard by clause		(V) Justification for the technical deviation and future measures
No. and title of clause	Content		Clause No.	Content	Classification by clause	Detail of technical deviation	
5.12 Reflex reflector	Requirements for the performance and installation of rear reflex reflectors, pedal reflectors, side reflectors and front reflectors are specified.		—		Addition	JIS requires installation of reflectors.	The requirement was added because the bicycles specified in JIS are intended for use on public roads, while those in ISO Standard are not.
5.13 Warning device	Requirements regarding how to install a bell or buzzer are specified.		—		Addition	JIS requires that bicycles shall be equipped with a bell or a buzzer.	The requirement was added because bicycles specified in JIS are intended for use on public roads, while those in ISO Standard are not.
5.14 Lock	Requirements regarding preventions of turning and slipping down of a side lock are specified.		—		Addition	The requirements are added to JIS .	JIS requirements are for securing safety when installing a side lock.
5.15 Stand	Requirements for a stand when it is equipped.		—		Addition	The requirements are added to JIS .	JIS requirements are for securing safety when a stand is installed.
6.5.1 Fixing test on handlebar/stem assembly	A fixing test method on a handlebar/stem assembly is specified. The torque applied to the fastener shall be appropriate and not exceed 20 N · m.		4.6.2	A fixing test method on a handlebar/stem assembly is specified. The torque applied to the fastener shall not exceed a minimum clamping torque recommended by the manufacturer.	Alteration	JIS specifies the clamping torque of the fastener at the time of testing.	The clamping torque is considered necessary to be specified in JIS because clamping torque of fasteners is not mentioned in instruction manuals in Japan and because it is necessary to be consistent with the requirements of JIS D 9412 which specifies handlebars as a part of a bicycle.

(I) Requirements in JIS		(II) International Standard number	(III) Requirements in International Standard		(IV) Classification and details of technical deviation between JIS and the International Standard by clause		(V) Justification for the technical deviation and future measures
No. and title of clause	Content		Clause No.	Content	Classification by clause	Detail of technical deviation	
6.5.2 Fixing test on handlebar stem and fork stem	A fixing test on a handlebar stem and fork stem is specified. The clamping torque applied to the fastener shall be appropriate and not exceed 20 N • m.		4.6.3	A fixing test on a handlebar stem and fork stem is specified. The fastener clamping torque shall not exceed the minimum value recommended by the manufacturer.	Alteration	JIS specifies the clamping torque of the fastener at the time of testing.	The clamping torque is considered necessary to be specified in JIS because clamping torque of fasteners is not mentioned in instruction manuals in Japan and because it is necessary to be consistent with the requirements of JIS D 9412 which specifies handlebars as a part of a bicycle.
6.5.3 Removal force test on handlebar grip	A removal force test on a handlebar grip, which is performed after immersion of the grip in warm water of 60 °C ± 2 °C, is specified.		3.3.2	After a handlebar fitted with handlebar grips has been cooled down to below -5 °C, a tensile force of 70 N is applied during the period where the handlebar temperature rises from -5 °C up to +5 °C.	Alteration	The removal force is checked after immersion in warm water in JIS , while it is checked under a dew formation condition in ISO Standard.	The test condition is changed because grip coming-off troubles often occur in the rainy season in Japan.
6.5.4 Removal force test on end cap	A removal force test on a handlebar end cap, which is performed under a dry condition, is specified.		—		Addition	The requirement is specified in the same manner as in JIS D 9301 (<i>Bicycles for general use</i>).	The requirement is also specified in ISO 4210 Cycles—Safety requirements for bicycles . The requirement is added to be consistent with the ISO 4210 requirement.

(I) Requirements in JIS		(II) International Standard number	(III) Requirements in International Standard		(IV) Classification and details of technical deviation between JIS and the International Standard by clause		(V) Justification for the technical deviation and future measures
No. and title of clause	Content		Clause No.	Content	Classification by clause	Detail of technical deviation	
6.6 Static load test on wheel	A static load test where a force of 180 N is applied to a point on a wheel held horizontally is specified.		4.8	A static load test where a force of 178 N is applied to a point on a wheel held horizontally is specified.		The force to be applied is 180 N in JIS and 178 N in ISO Standard.	The test force was given originally by a weight having a mass of 20 kg in both standards, but the difference occurred when the force was converted to the international unit (N).
No specification			4.7.1	A falling mass test on a frame/front fork assembly is specified.	Deletion		The test is specified in JIS D 9401 , and this JIS requires to use parts of the quality level identical to or better than what is specified in JIS D 9401 .
No specification			4.7.2	A free-fall impact test on a frame/fork assembly is specified.	Deletion		The test is specified in JIS D 9401 , and this JIS requires to use parts of the quality level identical to or better than what is specified in JIS D 9401 .
No specification			4.9	A pedal/crank assembly kinetic test is specified.	Deletion	The test is specified in JIS D 9416 , and this JIS requires to use parts of the quality level identical to or better than what is specified in JIS D 9416 , however the mass to be suspended is 40 kg in JIS and 20 kg in ISO Standard.	Because pedals are important parts to support the rider's weight, JIS employs the conventional mass value for securing safety.

(I) Requirements in JIS		(II) International Standard number	(III) Requirements in International Standard		(IV) Classification and details of technical deviation between JIS and the International Standard by clause		(V) Justification for the technical deviation and future measures
No. and title of clause	Content		Clause No.	Content	Classification by clause	Detail of technical deviation	
No specification			4.14	A saddle strength test is specified.	Deletion		The test is specified in JIS D 9431 , and this JIS requires to use parts of the quality level identical to or better than what is specified in JIS D 9431 .
7 Inspection	Type inspections and delivery inspections are specified.		—		Addition		JIS requirements are intended for securing quality of the products to be delivered.
8 Marking	Requirements for making of the manufacturer's name and the serial number on the product and for attachment of a tag describing the basic characteristics are specified.		3.14	Recommendation for marking the ISO Standard number, the manufacturer's name and the serial number on the bicycle are specified.	Addition	JIS requires attachment of a tag describing the basic characteristics of the bicycle.	The additional JIS requirement is intended for giving information to the user for product selection.
9 Instructions	Items to be described in the instruction are specified (17 items).		3.13	Items to be described in the instruction are specified (10 items).	Addition	JIS specifies additional items to be described such as customer service counters and disposal of the bicycle.	The additional items in JIS are in consideration of the environment of use of the bicycles for young children.

Overall degree of correspondence between **JIS** and International Standard (**ISO 8098:2002**): MOD

NOTE 1 Symbols in sub-columns of classification by clause in the comparison table indicate as follows:

- Deletion: Deletes the specification item(s) or content(s) of International Standard.
- Addition: Adds the specification item(s) or content(s) which are not included in International Standard.
- Alteration: Alters the specification content(s) which are included in International Standard.
- Selection: Provides an alternative choice by adding the specification content(s) of equal status, which may be used as an alternative to that given in the original International Standard.

NOTE 2 Symbol in column of overall degree of correspondence between **JIS** and International Standard in the comparison table indicates as follows:

- MOD: Modifies International Standard.

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